UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/010,395	11/05/2001	Devadatta V. Bodas	2207/ 12611	4416

7590 08/31/2004	EXAMINER
KENYON & KENYON	CHEN, TSE W

ART UNIT	PAPER NUMBER
2116	

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Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/010,395	BODAS, DEVADATTA V.
	Examiner	Art Unit	
	Tse Chen	2116	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>05 November 2001</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-30</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-30</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>05 November 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>6/1/2004</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

Information Disclosure Statement

1.   The information disclosure statement (IDS) submitted on June 1, 2004, was filed before

the mailing date of the first Office Action. The submission is in compliance with the provisions

of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the

examiner.

Specification

2.   The disclosure is objected to because of the missing Brief Summary of the Invention. See

MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37

CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the

invention rather than the disclosure as a whole. The summary may point out the advantages of

the invention or how it solves problems previously existent in the prior art (and preferably

indicated in the Background of the Invention). In chemical cases it should point out in general

terms the utility of the invention. If possible, the nature and gist of the invention or the inventive

concept should be set forth. Objects of the invention should be treated briefly and only to the

extent that they contribute to an understanding of the invention. Appropriate correction is

required.

3.   Claims 1, 6, 9, 16, 19, 26, and 29 objected to because of the following informalities:

- As per claim 1, "said number being less than said first number" on lines 5-6 should be

  "said second number being less that said first number" to avoid any antecedent confusion.

- As per claims 6, 16, and 26, "Interconnect" should not be capitalized.

- As per claims 9, 19, and 29, the decision parameters of "Power Management", "Thermal

    Management", etc. should not be capitalized.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Re Claims 1-2, 4-8, 10-12, 14-18, 20-22, 24-28, and 30

5.   Claims 1-2, 4-8, 10-12, 14-18, 20-22, 24-28, and 30 are rejected under 35 U.S.C. 102(b)

as being anticipated by Gupta et al., U.S. Patent 5996083, hereinafter Gupta.

6.   In re claim 1, Gupta discloses a system [microprocessor 100] to control a communication

rate [bus width] between electrical components [functional, I/O units] [abstract; fig.2; col.5, 1.39

-- col.6, 1.13], comprising:

- A first component [functional or I/O unit FU1] including a first port [data bus interface;

    logic 178, multiplexer 180, and other associated circuitries] to be coupled to a first

    number of communication channels [64 bits data bus 102 or 104] [col.9, ll.8-32; col.15,

    1.66 -- col.16, 1.16].

- Said first port to control communication between the first port and the communication

    channels at a first communication rate [64 bits bus width; enable both buffers and select

    appropriate multiplexer output A to have full 64 bits driven onto full data bus], such that

    said first port is to communicate with a second number of communication channels [32

bits data bus 102 or 104; enable just one buffer and toggle MUX to have 32 bits driven

onto 32 bits data bus] in response to triggering event [signal MUX; software responds to

certain events by modifying associated field 108 of power control register 106 to result in

appropriate signal MUX] [col.3, ll.40-63; col.8, ll.48-67; col.9, ll.8-32].

- Said second number [32] being less than said first number [64].

7.   As to claims 2, 12, and 22, Gupta discloses a reconfiguration that is performed by a

power manager [software; software modifies register field 108 in power control register 106] to

change from communication with the first number of channels [64 bits interface] to the second

number of channels [32 bits interface] [col.3, ll.40-63; col.9, ll.8-32; col.11, l.59 -- col.12, l.21].

8.   As to claim 4, 14, and 24, Gupta discloses a reconfiguration that is performed by an

operating system under Operating System-based Power Management (OSPM) to change from

communication with the first number of channels to the second number of channels [col.2, ll.32-

34; col.3, l.40 -- col.4, l.26; col.11, l.59 -- col.12, l.21].

9.   As to claim 5, 15, and 25, Gupta discloses the first number of channels that includes the

second number of channels as a subset [col.9, ll.8-32; full 64 bits bus width includes two subsets

of 32 bits].

10.   As to claim 6, 16, and 26, Gupta discloses an interconnect bus [102, 104] that includes

the first number of communication channels [64 bits bus width] [col.5, ll.58-60; col.9, ll.8-32].

11.   As to claim 7, 17, and 27, Gupta discloses a reconfiguration that is performed to change

from communication with the first number of channels to the second number of channels in

response to the triggering event [software event that sets up signal MUX] as a system

management policy-based decision [col.3, l.40 -- col.4, l.26; col.11, l.59 -- col.12, l.21; software

decides microprocessor system power consumption based on policies such as predetermined
amount of power dissipation].

12.   As to claim 8, 18, and 28, Gupta discloses the policy-based decision that involves
analysis of a number of decision criteria [predetermined amount of power dissipation, block of
code fittable into cache, etc.] [col.3, l.40 -- col.4, l.26; col.11, l.59 -- col.12, l.21].

13.   As to claim 10, 20, and 30, Gupta discloses the analysis and the reconfiguration that
occur at a time after system boot-up [col.3, ll.40-26; software during running looks to future and
implements configuration].

14.   In re claim 11, Gupta discloses a method to control the communication rate [bus width]
of electrical components [functional, I/O units] [abstract; fig.2; col.5, l.39 -- col.6, l.13]
comprising:

- Utilizing, by a first component [functional or I/O unit FU1], a first number of
  communication channels [64 bits data bus 102 or 104] to communicate with a second
  component [functional or I/O unit FUn] at a first communication rate [64 bits bus width]
  [col.8, ll.48-67; col.9, ll.8-32; enable both buffers and select appropriate multiplexer
  output A to have full 64 bits driven onto full data bus].

- Utilizing, by said first component, a second number of communication channels [32 bits
  data bus 102 or 104] to communicate with said second component at a second
  communication rate [32 bits bus width] [col.8, ll.48-67; col.9, ll.8-32; enable just one
  buffer and toggle MUX to have 32 bits driven onto 32 bits data bus].

- Reconfiguring between the utilization of said first number of channels and said second
  number of channels in response to a triggering event [signal MUX] [col.3, ll.40-63; col.8,

ll.48-67; col.9, ll.8-32; software responds to certain events by modifying associated field

108 of power control register 106 to result in appropriate signal MUX].

15.   In re claim 21, Gupta discloses a set of instructions residing in a storage medium

[software], said set of instructions capable of being executed by a processor to control the

communication rate of electrical components [abstract; col.3, 1.40 – col.4, 1.26] comprising each

and every limitation as discussed above in reference to claim 11.

Claim Rejections - 35 USC § 103

16.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

Re Claims 3, 13, and 23

17.   Claims 3, 13, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Gupta as applied to claims 2, 12, and 22 above, and further in view of Kasamatsu et al., U.S.

Patent 6704808, hereinafter Kasamatsu.

18.   Gupta discloses each and every limitation of the claim as discussed above in reference to

claim 2, 12, and 22. In particular, Gupta discloses a reconfiguration that is performed by a power

manager [software; software modifies register field 108 in power control register 106] to change

from communication with the first number of channels [64 bits interface] to the second number

of channels [32 bits interface] [col.3, ll.40-63; col.9, ll.8-32; col.11, 1.59 -- col.12, 1.21]. Gupta

did not disclose explicitly that the power manager is also responsible for the thermal condition of

the system.

19.   Kasamatsu discloses a system [computer system 10] comprising a power manager [power

source controller 48] that is also a thermal manager [col.8, ll.54-65].

20.   It would have been obvious to one of ordinary skill in the art, having the teachings of

Gupta and Kasamatsu before him at the time the invention was made, to use the power manager

taught by Kasamatsu with the system disclosed by Gupta in order to obtain the system wherein a

reconfiguration is performed by a thermal manager to change from communication with the first

number of channels to the second number of channels. One of ordinary skill in the art would

have been motivated to make such a combination as it provides a way to provide the related

power and thermal management in a single unit [Kasamatsu: col.8, ll.54-65; power and thermal

management are related because as power consumption is increased, thermal overheating

becomes a concern].

Re Claims 9, 19, and 29

21.   Claims 9, 19, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Gupta and Kasamatsu as applied to claims 3, 13, and 23 above, and further in view of Arends,

U.S. Patent 5357625, hereinafter Arends.

22.   Gupta and Kasamatsu disclose each and every limitation of the claim as discussed above

in reference to claims 3, 13, and 23. In particular, Gupta discloses the decision parameters that

include power management [predetermined amount of power dissipation] and system

performance [looking into future to allocate functional unit resources is an aspect of system

performance in the broadest interpretation] while Kasamatsu further discloses the decision

parameter of thermal management [claim 3]. Gupta and Kasamatsu did not discuss RAS.

23.   Arends discloses a system [network] wherein a number of decision parameters include

RAS [col.1, ll.57-66].

24.   It would have been obvious to one of ordinary skill in the art, having the teachings of

Arends, Gupta and Kasamatsu before him at the time the invention was made, to include the

RAS decision parameter taught by Arends with the decision parameters disclosed by Gupta and

Kasamatsu in order to obtain the system wherein the number of decision parameters include:

power management, thermal management, RAS, and system performance. One of ordinary skill

in the art would have been motivated to make such a combination as it provides a way to setup a

system that facilitates communication among its various components [Arends: col.1, ll.14-66;

functional units are analogous to the terminals].

Conclusion

25.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

      a.   Anumula et al., U.S. Patent 6041388, discloses a system with variable bus width.

      b.   Rahamin et al., U.S. Patent 5550710, discloses a module with variable bus width.

      c.   Miller et al., U.S. Patent 5740386, discloses a system with variable bus width.

      d.   Gans, U.S. Patent 6725316, discloses an apparatus with variable bus width.

      e.   Chauvel et al., U.S. Patent 6751706, discloses a power management system.

      f.   Maruyama et al., U.S. Patent 6535412, discloses a device with variable bus width.

      g.   Kau et al., U.S. Patent 6112273, discloses an operating system based power

management invention.

      h.   Klein, U.S. Patent 6219795, discloses a thermal manager.

      i.   Asada et al., U.S. Patent 6570976, discloses a system with RAS parameter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tse Chen whose telephone number is (571) 272-3672. The examiner can normally be reached on Monday - Friday 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Browne can be reached on (571) 272-3670. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tse Chen
August 25, 2004
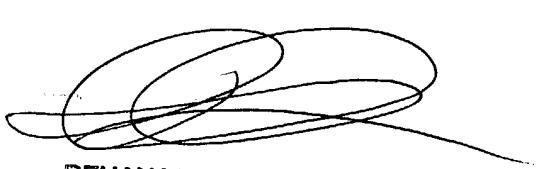
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